

Patent claims

1. A composite comprising polyacetal and at least one thermoplastic polyamide elastomer formed by a polyacetal molding which has been partially or completely coated with the thermoplastic polyamide elastomer or onto which one or more moldings composed of the thermoplastic polyamide elastomer have been directly molded, wherein the polyacetal and the thermoplastic polyamide elastomer have been bonded adhesively or cohesively to one another via injection of the thermoplastic polyamide elastomer onto the polyacetal molding, and wherein the tensile bond strength between the polyacetal and the thermoplastic polyamide elastomer is at least 0.5 N/mm^2 .
2. The composite as claimed in claim 1, wherein the tensile bond strength between the polyacetal and the thermoplastic polyamide elastomer is at least 1.0 N/mm^2 .
3. The composite as claimed in claim 1, wherein the polyacetal used comprises a polyoxymethylene copolymer.
4. The composite as claimed in claim 1, wherein the polyacetal molding and/or the polyamide elastomer molding has additives which are selected from the group consisting of stabilizers, nucleating agents, impact modifiers, mold-release agents, lubricants, fillers, reinforcing materials, pigments, carbon black, light stabilizers, flame retardants, antistatic agents, plasticizers, and optical brighteners.
5. The composite as claimed in claim 1, wherein polyacetal comprises at least one modifier.
6. The composite as claimed in claim 5, wherein the modifier is a compound which is selected from the group consisting of thermoplastic polyurethane elastomer, methyl methacrylate-butadiene-styrene core-shell elastomer, methyl methacrylate-acrylate core-shell elastomer, polycarbonate, styrene-acrylonitrile

copolymer, and acrylate-styrene-acrylonitrile copolymer compounded material.

7. The composite as claimed in claim 6, wherein the polyacetal molding has been modified with from 1 to 50% by weight of a thermoplastic polyurethane elastomer, with from 1 to 40% by weight of a methyl methacrylate-butadiene-styrene core-shell elastomer, or with a mixture of the two, the entirety of the two modifiers being in the range from 1 to 50% by weight.
8. The composite as claimed in claim 1, wherein the hardness of the thermoplastic polyamide elastomer is in the range from Shore A 50 to Shore D 75.
9. The composite as claimed in claim 1, wherein the thermoplastic polyamide elastomer is a copolyamide containing the repeat structural units of the formulae I and II or of the formulae I and III or of the formulae I, II, and III, which have been linked to one another via ester bonds and/or amide bonds
- $$\begin{array}{ll} \text{-(O-R}^1\text{-O-[CO-R}^2\text{-[CO]}_q\text{]}_m\text{)}_n\text{-} & \text{(I),} \\ \text{-OC-R}^4\text{-OC-[NH-R}^3\text{-NH-CO-R}^4\text{-CO]}_o\text{-} & \text{(II),} \\ \text{[-NH-R}^5\text{-CO]}_p\text{-} & \text{(III),} \end{array}$$
- where R^1 , R^2 , and R^3 , independently of one another, are alkylene or cycloalkylene radicals,
 where R^4 and R^5 , independently of one another, are alkylene, cycloalkylene, or arylene radicals,
 m and q, independently of one another, are 0 or 1, and
 n, o, and p, independently of one another, are whole numbers at least equal to 1.
10. The composite as claimed in claim 1, wherein the thermoplastic polyamide elastomer used comprises a thermoplastic polyether-amide elastomer.

11. The composite as claimed in claim 10, wherein the thermoplastic polyetheramide elastomer has aliphatic polyamide groups as stiff segment and polytetramethylene oxide and/or polypropylene oxide and/or polyethylene oxide as flexible segment.
12. The composite as claimed in claim 9, wherein the aliphatic polyamide groups are selected from the group consisting of nylon-6, nylon-11, nylon-12, nylon-6,6, nylon-6,10, nylon-6,11, and nylon-6,12.
13. The composite as claimed in claim 1, wherein the polyacetal molding has been completely or partially coated with thermoplastic polyamide elastomer.
14. The composite as claimed in claim 1, wherein at least one other molding composed of thermoplastic polyamide elastomer has been molded onto the polyacetal molding.
15. A process for producing the composite as claimed in claim 1, which comprises using multicomponent injection molding processes to mold at least one polyacetal molding and at least one other molding composed of thermoplastic polyamide elastomer onto one another, the polyamide elastomer being injected onto the polyacetal molding.
16. The process as claimed in claim 15, wherein, prior to the molding-on of the thermoplastic polyamide elastomer, the polyacetal molding is preheated to a temperature in the range from 80°C to just below its melting point, and the melt temperature of the thermoplastic polyamide elastomer during the process of molding onto the polyacetal molding is from 200 to 320°C, and the mold has been temperature-controlled to a temperature in the range from 20 to 140°C.
17. The process as claimed in claim 16, wherein, prior to the molding-on of the thermoplastic polyamide elastomer, the polyacetal molding is preheated to a temperature in the range from 100 to 160°C, and the melt temperature of the thermoplastic polyamide elastomer during

the process of molding onto the polyacetal molding is from 220 to 280°C, and the mold has been temperature-controlled to a temperature in the range from 30 to 80°C.

- 5 18. The use of the composite as claimed in claim 1 as connector, as functional component with integrated sealing properties and/or with integrated damping properties, or else as non-slip and easy-grip element.